

## New NMFS Scientific Reports Published

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NOAA Technical Report NMFS 10 Sindermann, Carl J. (editor). **"Proceedings of the Seventh U.S.-Japan**

**Meeting on Aquaculture, Marine Finfish Culture, Tokyo, Japan, October 3-4, 1978."** August 1984, 31 p. (6 papers.)

NOAA Technical Report NMFS 11. Upton, Steve J., David W. Reducker, William L. Current, and Donald W. Duszynski. **"Taxonomy of North American fish Eimeriidae."** August 1984, 18 p., 30 figs.

### ABSTRACT

Taxonomic descriptions, line drawings, and references are given for the 30 named and 5 unnamed species of North American

fish Eimeriidae. In addition, a key was developed based on available morphologic data to distinguish between similar species. Taxa are divided into two genera: *Eimeria* (27 species) which are tetrasporocystic with dizoic, nonbivalved sporocysts, and *Goussia* (3 species) which are tetrasporocystic with dizoic, bivalved sporocysts that lack Stieda bodies and have sporocyst walls composed of two longitudinal valves.

NOAA Technical Report NMFS 12. Fay, Francis H., and Gennadii A. Fedoseev (editors). **"Soviet-American cooperative research on marine mammals. Volume 1—Pinnipeds."** September 1984, 104 p. (12 papers.)

NOAA Technical Report NMFS 13. Coe, James M., David B. Holts, and Richard W. Butler. **"Guidelines for reducing porpoise mortality in tuna purse seining."** September 1984, 16 p., 20 figs., 4 tables.

### ABSTRACT

More than a decade has passed since the passage of the Marine Mammal Protection Act of 1972. During that time the U.S. tuna purse seine fleet reduced its incidental

## Decapod Crustaceans of the U.S. Atlantic Coast

**"Shrimps, Lobsters, and Crabs of the Atlantic Coast of the Eastern United States, Maine to Florida,"** by Austin B. Williams, has been published by the Smithsonian Institution Press, 955 L'Enfant Plaza, Suite 2100, Washington, DC 20560. The author is with the NMFS Systematics Laboratory at the National Museum of Natural History, Smithsonian Institution, Washington, DC 20560.

This new volume is a revised and extended version of the author's 1965 report "Marine Decapod Crustaceans of the Carolinas," *Fish. Bull.* 65(1):1-298, which itself was a revision of the first definitive handbook on marine decapod crustaceans of southeastern North America by William Perry Hay and Clarence A. Shore published in 1918 as "The Decapod Crustaceans of Beaufort, N.C., and the Surrounding Region,"

*Bull. U.S. Bur. Fish.* 35:369-475.

This latest volume is a well illustrated compilation of data on the identification, distribution, life history, and ecology of the decapod crustaceans found along the continental shelf of the eastern United States. Included is a discussion of the history of decapod crustacean studies in the region, classification of the group, its zoogeographic relationships, details on study materials, and species accounts.

Altogether, 342 species are treated, with ranges from the heads of estuaries to the 100-fathom (190 m) contours. Thus, no deep-sea or freshwater species are included. Notes are given for 14 extralimital species having doubtful position in the regional fauna.

The text begins with a general key to the region's suborders, infraorders, sections, superfamilies, and families. This is followed by family, subfamily, generic, and specific accounts. Additional keys to categories below family

are arranged through the text. Excellent species accounts include abbreviated synonymy, recognition characters, measurements, appropriate figures, coloration, variation (if any), habitat data, type-localities, known range, and remarks. Some of the "Remarks" are necessarily very brief, but many are quite extensive and provide fine summaries of life history and ecological data. Included are references to much of the critical literature up to about 1980.

A number of these shrimps, lobsters, and crabs constitute some of the most valuable of the U.S. fisheries. Many others play important roles in their marine environments, and continued studies of them and their ecological relationships are important, and this book will serve as an excellent and very valuable reference. Indexed, the 550-page hardbound volume includes a glossary and is available from the publisher for \$40.00.

porpoise mortality rate more than ten fold. This was made possible through the development of gear and techniques aimed at reducing the frequency of many low probability events that contribute to the kill.

Porpoise are killed by becoming entangled or entrapped in folds and canopies of the net and suffocating. The configuration of the net, both before and during the backdown release procedure, is a major determinant of the number of porpoise killed. Speedboats can be used to tow on the corkline to prevent net collapse and also to adjust the net configuration to reduce net canopies prior to backdown. Deepening a net can reduce the probability of porpoise being killed by prebackdown

net collapse. The effects of environmental conditions and mechanical failures on net configuration can result in high porpoise mortality unless mitigated by skilled vessel maneuvers or prevented by the timely use of speedboats to adjust the net.

The backdown procedure is the only means to effectively release captured porpoise from a purse seine. It is also the time during the set when most of the mortality occurs. The use of small mesh safety panels and aprons in the backdown areas of nets reduces porpoise entanglement, and increases the probability of an effective release. The tie-down points on the net for preparing the backdown channel must be properly located in order to optimize porpoise release. A formula uses the

stretched depth of the net to calculate one of these points, making it a simple matter to locate the other. Understanding the dynamics of the backdown procedure permits a thorough troubleshooting of performance, thus preventing the repetition of poorly executed backdowns and thereby reducing mortality.

Porpoise that cannot be released must be rescued by hand. A rescuer in a rigidly inflated raft can rescue porpoise effectively at any time during a net set. Hand rescue can make the difference between above average kill and zero kill sets. In all circumstances, the skill and motivation of the captain and his crew are the final determinants in the prevention of incidental porpoise mortality in tuna seining.

## The Scombrids of the World

The Scombridae comprise 15 genera and 49 species of mostly epipelagic marine fishes—mackerels, Spanish mackerels, bonitos, and tunas—which support very important commercial, recreational, and artisanal fisheries throughout the world's tropical and temperate waters. The family is divided into two sub-families, the Gasterochismatinae (with only one species, *Gasterochisma melampus*) and the Scombrinae. The latter is divided by internal osteological characters into two groups of tribes: The more primitive mackerels (Scombrini) and Spanish mackerels (Scomberomorini), and the bonitos (Sardini) and the higher tribe Thunnini.

Authors Bruce B. Collette and Cornelia E. Nauen have prepared the FAO's second worldwide species catalog, issued within the FAO Fisheries Synopsis series as FIR/S125 Vol. 2, "Scombrids of the World," subtitled "An Annotated and Illustrated Catalogue of Tunas, Mackerels, Bonitos, and Related Species to Date." The volume has an illustrated glossary of technical terms and measurements and the "Systematic Catalogue" presents an excellent illustrated key to the genera and species of the Scombridae. Species information includes data on

scientific names and local names as well as FAO names in English, French, and Spanish. Diagnostic features are reported and illustrated as needed, geographic distribution is reported and mapped for each species, size data is given, as well as fisheries and utilization data, and pertinent literature citations. Extensive information on each species' habitat and biology is also given.

The volume is very well written and illustrated and will be of great interest and use to biologists, researchers, and administrators involved with scombrids and their fisheries. The 137-page paperbound volume is indexed by scientific and international FAO names and local names and contains an extensive bibliography. Species are also listed by major FAO statistical fishing area. The volume is available from Unipub, 205 East 42nd St., New York, NY 10017 (price not listed).

## AAAS Symposium on Aquatic Ecosystems

"Trophic Interactions Within Aquatic Ecosystems," edited by Dewey G. Meyers and J. Rudi Strickler, has been published by the Westview Press, 5500 Central Avenue, Boulder, CO 80301, as AAAS Selected Symposium 85. The volume is based on a symposium held

at the 1981 AAAS National Annual Meeting, 3-8 January 1981 in Toronto, Ontario, Canada, and cosponsored by AAAS Section G (Biology).

Briefly, 21 prominent ecologists examine aquatic food chain interactions in light of the structure and functioning of aquatic ecosystems. In 14 papers, they review relevant background literature, present their experimental findings, and predict significant areas of future research. The papers are presented in four parts: Phytoplankton (resource supply rates and phytoplankton community structure; ecological implications of patchiness in nutrient supply, and the impact of grazing and nutrient release on phytoplankton community structure). Zooplankton papers discuss calanoid copepod grazing on small and large particles, rotifer grazing rates and selectivity, copepod feeding mechanisms, cladoceran lipid reserves, and copepod feeding and evolution. In Part 3, "Fish," is a modern analysis of the feeding ecology of the white crappie and an analysis of contemporary models of foraging efficiency, resource partitioning, competition, and evolutionary divergence. The final section, "Community," provides a variety of views of food web dynamics in lake ecosystems. Indexed, the 472-page hardbound volume is available from the publisher for \$35.00.

## The Toxins Found in Marine Foods

"Seafood Toxins," edited by Edward P. Ragelis of the U.S. FDA, has been published as ACS Symposium Series 262 by the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, DC 20036. The volume is based on a symposium sponsored by the Division of Agricultural and Food Chemistry of the American Chemical Society at the ACS 186th Meeting, 28 August-2 September 1983 in Washington, D.C. The volume is an excellent and up-to-date compilation of data and reviews on an important topic, since toxins can be a major impediment to the development of many millions of dollars worth of latent high-quality fishery resources and can adversely affect literally tens of thousands of people worldwide.

Important toxins covered in the volume's 37 chapters include: Paralytic shellfish poison (PSP); tetrodotoxin (pufferfish) TTX; ciguatera, scombroid-related, and *Ptychodiscus brevis* toxins; diarrhetic shellfish poison; and neurotoxins, endotoxins, and peptide toxins associated with blooms of certain strains of blue-green algae (cyanobacteria). Along with their reviews and studies, the authors also identify and recommend future epidemiological, toxicological, and chemical research needs. Some chapters present new and previously unpublished data; others are a synthesis of existing information.

The volume is divided into six sections, the first an overview presenting excellent reviews of U.S. marine resource development, especially as it may be affected by marine toxins, paralytic shellfish poisoning, ciguatera poisoning, and a wide variety of miscellaneous seafood toxicants. Alaska's shellfish industry, and risks and benefits of seafood, are also discussed.

The second section on shellfish toxins, presents 12 papers on such issues as diarrhetic shellfish poisoning, paralytic shellfish toxins and finfish toxins in tropical waters, biosynthesis

of paralytic shellfish toxins, cryptic paralytic shellfish toxins, a historical perspective on paralytic shellfish poison, taxonomic and biogeographic aspects of toxic dinoflagellates, and more. Another eight papers then deal with ciguatera toxins, two with tetrodotoxin, five with toxins from red tide and cyanobacteria, and three with aspects of scombroid fish poisoning.

The volume thus consolidates the work of many recognized authorities in the field of seafood toxins, their chemistry, origins, and geographic distribution, pharmacological aspects, monitoring and detection methods, etc. Authoritative and well written, the papers will be of considerable interest and use to scientists, pharmacologists, and others involved in seafood research and regulation. The 460-page hardbound volume is indexed by subject and author, and is available from the publisher for \$79.95 (U.S. and Canada) and \$95.95 elsewhere.

## Ancient and Modern Fish Harvest Methods

The third and greatly expanded edition of "Fish Catching Methods of the World," by Andres von Brandt, has been published by Fishing News Books Ltd., 1 Long Garden Walk, Farnham, Surrey, England. It is almost double the size of the original 1964 edition, and the author discusses how fishes can be caught, in the broadest sense. Its 31 chapters review and thoroughly illustrate fish catching methods from stone age techniques to the most modern gear and techniques, although much of it is devoted to an extensive review of essentially small-scale or artisanal fishing methods.

Following a brief introductory chapter, the author relates means of hand gathering fishes; diving techniques of men and women; using various animals such as horses, birds, porpoise, etc. to harvest fish; stupefying fish; fishing with spear, harpoon, arrow, etc.; and the use of clamps,

tongs, rakes, and wrenching gear. The author also reviews basic line fishing implements; gear and methods of line fishing; sport fishing gear; fish attraction methods including lures, lights, chemicals, etc.; gaffs, fish harrows, and jigs; natural and artificial shelters; mechanical traps and snares; fish trapping with permanent and temporary barriers, traps, pots, etc.; and catching jumping fish.

Several chapters deal with a wide variety of nets and netting: Scoop nets, trawls and trawling, seines and seining, surround nets, lift nets, cast nets, gillnets, entangling nets, making nets, and much more. Another chapter discusses fishing rituals and religious beliefs and another is presented on fishing systems and harvesting machines. An appendix classifies the various types of fish catching methods, and the bibliography lists 690 literature citations.

Well illustrated with 733 drawings and photographs, the 418-page hardbound volume is an extensive and thorough review of global fish harvest methods, and is available from the publisher for £27.50.

"The Complete Book of Seafood Fishing" by Rob Avery has been published by the Van Nostrand Reinhold Company, Inc., 135 West 50th Street, New York, NY 10020. The author, a British freelance writer, has provided a very basic, but fairly thorough description of ways to harvest marine fish and shellfish and preserve them. Though there is some material on commercial fishing for a living, the book is more suited to coastal residents or anglers who want to harvest marine species for food or sport.

Thus the author provides basic data on tides, where and how to find fish and shellfish, fish traps and trapping, angling from shore, nets and netting, fishing from small boats, basic seamanship, safety precautions, basic and more advanced small-boat fishing, making and mending nets, knots, safety precautions, processing and preparing the catch, making fish meal, seaweeds and their uses, and fish oils and other byproducts. In-

dexed, the 162-page hardbound volume is available from the publisher for \$16.95.

## The Ecology of an Estuarine Ecosystem

**"Ecology of Barnegat Bay, N.J.,"** edited by Michael J. Kennish and Ricahrd A. Lutz, has been published by Springer-Verlag, 175 Fifth Avenue, New York, NY 10010. Kennish is with the Oyster Creek Nuclear Generating Station, Forked River, N.J., and Lutz is with Rutgers University, New Brunswick, N.J.

This monograph consists of 14 chapters by 20 scientists from academia, industry, and government who have conducted much of the Bay's ecological research in the last 20 years, largely in regard to the siting and effects of the Oyster Creek Nuclear Generating Station on Barnegat Bay, a shallow (1-6 m), lagoon-type New Jersey estuary. Many reports, published and unpublished, have been written, and this volume, in short, defines the ecological characteristics of the Bay, and provides an ecological data base for future comparison studies and impact assessments, and will be of interest to other estuarine scientists working on problems of environmental monitoring, trophic studies, and fisheries.

Chapter 1 discusses the Bay's hydrodynamics, geomorphology, and water quality, while Chapter 2 details nutrient conditions of Barnegat Bay and other New Jersey coastal bays. The estuary's phytoplankton community and its seasonal periodicities are examined in Chapter 3, while Chapter 4 describes the macroflora of the Bay. Chapter 5 provides a look of the Bay's zooplankton community, Chapter 6 reviews the benthic fauna of the Bay, and Chapter 7 describes the shellfish populations of the Bay, and reviews life history studies of the hard clam and blue crab. Chapter 8 reviews shipworms and their ecology, while Chapter 9 summarizes the fouling organisms of the Bay. Chapter 10 defines the community structure,

seasonal patterns, reproductive characteristics, and population trends of bay fishes, while Chapter 11 reviews the commercial and sport fisheries of Barnegat Bay. Chapter 12 examines the complex interrelationships of the Bay's food web, and the effects of dredging, waste disposal, and operation of the nuclear plant on the bay's ecosystem are discussed in Chapter 13.

Finally, Chapter 14 reviews and summarizes the data in the first 13 chapters. Extensive references are given with each chapter, while Appendix A presents a bibliography of unpublished papers, theses, and government reports on the Bay, many of which are not widely distributed, but which are on file in the library of the GPU Nuclear Corporation. The 396-page paperbound volume is indexed by scientific name, author, and subject, and is available from the publisher for \$34.00.

## Mechanically-Separated Fish Flesh Resources

The second and expanded edition of **"An Annotated Bibliography on Mechanically-Separated Finfish and Crustacea Meats,"** compiled by Frank B. Thomas, Joyce A. Taylor, and Freda A. Ramey, has been published as UNC Sea Grant Publication 84-02 by the University of North Carolina Sea Grant College, P.O. Drawer 1137, Morehead City, NC 28557, in cooperation with the Alaska Fisheries Development Foundation, Inc.

There have been many new developments since the first edition was published in 1977, and surimi products are being commercially produced on several continents. Thus, the compilers made an extensive review of the literature (with particular emphasis on established publications, trade journals, and selected technological conferences) and their annotated bibliography is a ready source of information for scientists, students, and others interested in this aspect of fisheries utilization. Reference to patents are also in-

cluded, and the publication is a handy guide to the recent literature and summary of the state of the art. It includes 135 pages of annotated citations, 4 pages of patents, a subject index by category (i.e., raw materials and resources, applications, nutritive value, etc.). It also lists several selected reference books and proceedings, meetings and symposiums, and abstracts and indexes. The 170-page paperbound volume is available from the publisher for \$4.00.

## Packaging and Shipping Fish and Seafood Products

The **"Proceedings of the First National Conference on Seafood Packaging and Shipping,"** edited by Roy E. Martin, Vice President, Science and Technology, National Fisheries Institute, 2000 M Street, N.W., Suite 580, Washington, DC 20036, has been published by the Institute. The conference, held 15-17 November and 7-9 December 1982 in Washington, D.C., and Seattle, Wash., respectively, was jointly sponsored by the NFI, the National Marine Fisheries Service, and the Universities of Alaska and Washington.

In sum, the volume is an excellent review of current research and development activities and recent technological advances in packaging, shipping, and extending the quality of seafoods. Conference sessions were devoted to modern and future transportation methods, packaging, handling, and shipping of seafoods, shipping containers, air transportation, controlled and modified atmosphere packaging, new techniques for fish distribution and regulatory concerns. In the final section, NFI has reprinted a series of pertinent technical articles and guidelines on use of modified atmospheres, vacuum packaging, airline shipping requirements/procedures or policies, containers for seafoods, and more. The 599-page paperbound volume is available from the NFI (no price listed).